

WHAT IS CLAIMED IS:

1. A focus stabilizing apparatus comprising:

an objective lens arranged opposite to an observation
5 sample;

a fixing base for fixing the objective lens;

a minute movement table on which the objective lens is
provided;

10 parallel springs situated between the fixing base and the
minute movement table to allow the minute movement table to be
moved in an optical axis direction of the objective lens;

an actuator provided between the fixing base and the
minute movement table to minutely displace the minute movement
table in the optical axis direction of the objective lens;

15 a displacement sensor for detecting a displacement amount
of the objective lens; and

control means for allowing the actuator to perform an
extending/contracting operation on the basis of a detection
output of the displacement sensor to control the objective
20 lens and bring it to a just-in-focus position relative to the
observation sample.

2. A focus stabilizing apparatus according to claim 1,
wherein said control means includes:

5 a memory section for storing an output of the displacement sensor corresponding to a just-in-focus state between the observation sample and a focal point of the objective lens;

10 a comparing section for comparing an output of the displacement sensor and an output of the displacement sensor stored in the memory section; and

a control section for outputting an electrical signal for canceling a distance variation between the observation sample and the objective lens on the basis of a result of comparison by the comparing section.

3. A focus stabilizing apparatus comprising:

an objective lens arranged opposite to an observation sample;

a fixing base for fixing the objective lens;

5 a sample base for supporting the observation sample;

a focus adjusting mechanism provided between the sample base and the fixing base;

a minute movement table on which the objective table is provided;

10 parallel springs situated between the fixing base and the minute movement table to allow the minute movement table to be moved in an optical axis direction of the objective lens;

- 15 an actuator provided between the fixing base and the minute movement table to minutely displace the minute movement table in the optical axis direction of the objective lens;
- 15 a displacement sensor provided between the fixing base and the minute movement table, for detecting a displacement amount of the objective lens; and
- 20 control means for allowing the actuator to perform an extending/contracting operation on the basis of a detection output of the displacement sensor to control the objective lens and bring it to a just-in-focus position relative to the observation sample.

4. A focus stabilizing apparatus according to claim 3, wherein the objective lens is focused on the observation sample by the focus adjusting mechanism, and then, the control means keeps the objective lens focused on the observation sample.

5. A focus stabilizing apparatus comprising:
an objective lens arranged opposite to an observation sample;
a fixing base for fixing the objective lens;
5 a sample base for supporting the observation sample;

a focus adjusting mechanism and a focusing adjusting handle, both provided between the sample base and the fixing base;

10 a minute movement table on which the objective table is provided;

parallel springs situated between the fixing base and the minute movement table to allow the minute movement table to be moved in an optical axis direction of the objective lens;

15 an actuator provided between the fixing base and the minute movement table to minutely displace the minute movement table in the optical axis direction of the objective lens;

a displacement sensor provided between the fixing base and the sample base, for detecting a displacement amount of
20 the objective lens; and

control means for allowing the actuator to perform an extending/contracting operation on the basis of a detection output of the displacement sensor to control the objective lens and bring it to a just-in-focus position relative to the
25 observation sample.

6. A focus stabilizing apparatus according to claim 5, wherein said control means includes:

a memory section for storing an output of the displacement sensor corresponding to just-in-focus state

between the observation sample and a focal point of the objective lens;

10 a comparing section for comparing an output of the displacement sensor and an output of the displacement sensor stored in the memory section; and

a control section for outputting an electrical signal for canceling a distance variation between the observation sample and the objective lens on the basis of a result of comparison by the comparing section.